

ABSTRACT OF THE DISCLOSURE

Chloride ion and sodium ion determination methods, compositions, and assays are provided which are based on the use of sodium ion as an activator for α -amylase. Chloride ion and sodium ion determination are performed by colorimetry, using measurements of α -amylase activity to indirectly measure the desired ion concentrations. One preferred composition for chloride ion determination comprises α -amylase that is substantially calcium free, sodium ion in higher concentration than the α -amylase, and an α -amylase activity detecting substrate. In the methods, α -amylase is deactivated by a calcium-binding compound, thereby preventing calcium from bonding with the α -amylase. Next, chloride ion and sodium ion stoichiometrically bond with deactivated α -amylase, thereby activating the α -amylase. Chloride ion determination methods are based on using test sample chloride as the limiting factor in α -amylase activation and sodium ion determination methods are based on using test sample sodium as the limiting factor in α -amylase activation.

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